feel grateful to Professor Goebel for the admirable manner in which he has presented them, and all will look forward eagerly to the appearance of the subsequent volumes, which we hope may not be long delayed.

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STANFORD UNIVERSITY,
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MINERALOGY.

Genesis of the Diamond. — Derby[1] has sifted the evidence of the Brazilian deposits bearing on the puzzling and as yet unsolved problem of the origin of the diamond. Three localities are discussed, of as many types.

At the Agua Suja mine, in western Minas Geraes, the diamond-bearing bed is a decomposed conglomerate, both matrix and pebbles having been transformed into clay. The fragments can, however, still be recognized as belonging to the various schists, granites, and sandstones upon which the bed rests, and to basic eruptives, probably members of the nepheline-bearing series of rocks of the region. Weight is placed upon these basic eruptives as suggesting an analogy with the South African deposits; on the whole, however, the differences are more striking than the similarities. The diamond is evidently contained in the cement, not in any constituent of the breccia, and its source cannot even be conjectured with any degree of certainty.

In the mines of Diamantina and those of Grao Mogôl, all in Minas Geraes, which are the oldest and best known of the Brazilian fields, the diamonds occur in a quartzose rock known as itacolumite. There are two types of this rock, a schistose form, and a massive variety which the writer believes is clearly clastic, and later than the schistose form, resting unconformably upon it. Probably both types of the rock are clastic, but both are largely metamorphosed, and it is impossible to say whether the diamond is a local product of that metamorphism or was introduced as a clastic element.

The third locality described is the mine at São João Chapada, near Diamantina. The description is very full, the place having never been described before, as its interest demands. It consists of a huge open pit, in a mass of clay produced by the complete decomposition of the country rocks. The clays may be differentiated

[1] Brazilian Evidence on the Genesis of the Diamond. *Journ. of Geol.*, vol. vi, p. 121.

roughly by variety of color into three horizons, or rather bodies, as their shape is irregular, in each of which diamonds are said to have been found. A careful consideration of the materials of these various clays leads the author to consider that they represent an original group of phyllites of varied character, but chiefly of clastic origin, threaded with veins of pegmatite, and possibly containing some eruptive material of more basic character. Assuming the correctness of this analysis of this very obscure and difficult problem of "mud-geology," it becomes desirable to know, first, whether the pegmatite was eruptive and may have exercised a metamorphic action upon the schists, or was secretionary; second, whether the diamond belongs to the pegmatite or to the country rock. The first question the writer decides in favor of the eruptive hypothesis, although the evidence is not conclusive. The second he considers it necessary to leave an open one, but the indications seem to favor the view that the diamonds were formed in the phyllites on the border of the pegmatites and presumptively through the agency of their eruptive action, the phyllites having provided the carbon which is shown to be amply sufficient.

Etching Figures of Triclinic Minerals.[1] The writer has investigated several triclinic minerals by the etching method for the purpose of determining whether they possessed the holohedral centro-symmetry of that system. His experiments on tourmaline (hexagonal, hemimorphic) and on cleavage plates of acid dextro-tartrate of strontium (triclinic, hemihedral) showed that the etching figures produced on two parallel crystal faces of unlike physical character were distinctly different, sufficiently so to be used as a safe means of determining such unlikeness. The tests recorded were made upon the following minerals, the result in all cases being confirmatory of their accepted holohedral character: axinite, cyanite, copper sulphate (artificial crystals), rhodonite, albite. On the tourmaline and cyanite the etching was produced by the action of a fusing mixture of acid potassium sulphate and fluorite, on the others by a mixture of equal portions of sulphuric and hydrofluoric acids. The results add to our knowledge of the etching figures of some of the minerals named, although negative as far as concerns the point investigated.

Clinohedrite, a New Mineral from Franklin, N. J.[2] — The new mineral was first found by Mr. Nason some two years ago, but more

[1] Walker, T. L. *Amer. Journ. of Sci.*, vol. v, p. 176, 1898.

[2] Penfield, S. L., and Foote, H. W. *Amer. Journ. of Sci.*, vol. clv, p. 289, 1898.